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# GEOGRAPHICAL INFLUENCES IN THE DEVELOPMENT OF WISCONSIN *

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## CHAPTER IV. DEVELOPMENT OF WISCONSIN AS AFFECTED BY ITS MINERALS

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### LEAD

The lead of the upper Mississippi valley is found in the Trenton-Galena formation, which outcrops in such a way that mining by surface diggings was, in the early days, an easy matter. The productive areas include a part of eastern Missouri and a district where the states of Iowa, Illinois, and Wisconsin join. The Wisconsin section occurs within the counties of Grant, Iowa, and Lafayette. The presence of the lead ore was known to the Indians, but there is no evidence that they made any use of it until the introduction of fire arms by the French. This event gave the lead a value to the savages both for bullets and as a medium of exchange. The French obtained information of the lead very early, as Hennepin's map of 1687 locates mines in the vicinity of the present city of Galena, Illinois.[1] In 1690 some French traders bought lead from Indian mines on the Galena River. Perrot built a stockaded post in the region and worked the mines that same year. The Indians probably learned from the French to mine and reduce the ore in a very crude way. The squaws usually dug the mineral, at first using buck-horns, but later hoes, shovels, and crowbars, which they obtained from the traders. The ore was elevated from the pits in which it was dug by means of deerskin sacks suspended by thongs of the same material. It was then carried in sacks to the smelting places. The lead was separated from the ore and run into "flats" weighing about 70 pounds each. "These flats were formed by smelting the mineral in a small walled hole, in which the fuel and mineral were mingled, and the liquid run out in front into a hole scooped in the earth, so that a bowl-shaped piece of lead was formed therein." [2]

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* Continued from pp. 401-412, 490-499 and 585-609.

The mines soon attracted a small transient population, and in 1743 there were 18 or 20 miners in the region.[3] In 1741 2,228 bars of lead, weighing from 60 to 80 pounds each, were taken from one mine. Mines were worked in several places on both sides of the Mississippi River. Carver's map of 1776 locates one at Mineral Point, and he mentions seeing large quantities of lead ore in the large Sauk village at what is now Prairie du Sac.[4]

About 1766 there was a considerable trade in lead with the French colonies in Louisiana. Large boats capable of carrying 20 tons and propelled by 20 oars came up the Mississippi from New Orleans twice a year and returned with lead and such other produce as was available. The up-river trip took 70 days or more, but the return was much shorter and could even be accomplished in from 14 to 16 days during the May and June floods. There was a large profit in the lead business of that day. Miners who worked their own claims often made $30 a day for weeks together.[5] The traders also made a good profit. Julien Dubuque, who came into the region of the city named from him about 1788, became rich in the industry. Dubuque obtained from the Sauk and Fox Indians a formal permit to work the lead mines without interference.[6] His operations were very extensive. He employed Indians to prospect for lead mines, Canadians and half breeds to prove the claims and sometimes to work them. Often, however, he allowed the Indians to work the mines and bring the product to his trading-house on the west side of the river.[7] In 1805 Dubuque admitted taking from 20,000 to 40,000 pounds of lead yearly from his mines, mostly west of the Mississippi.[8]

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[1] Thwaites, R. G.: Notes on Early Lead Mining, *Wis. Hist. Coll.*, Vol. XIII, p. 272.

[2] Shaw, J.: Narrative, *Wis. Hist. Coll.*, Vol. II, p. 228.

[3] Thwaites, R. G.: Notes on Early Lead Mining, *Wis. Hist. Coll.*, Vol. XIII, p. 276.

[4] Gregory, J. G.: Jonathan Carver, *Parkman Club Papers*, No. 5, p. 79.

[5] Thwaites, R. G.: Notes on Early Lead Mining, *Wis. Hist. Coll.*, Vol. XIII, p. 278.

In 1804 the Sauk and Fox Indians relinquished to the government their claim to lands east of the Mississippi, including the lead mines. A portion of the tribes moved away and the Winnebago squatted in the district and did some mining. In 1810 the Sauks and Foxes still in the region mined 400,000 pounds of lead, which they exchanged for goods with the traders.[9]

In 1807 Congress reserved the mineral lands from sale, but ordered that 3 to 5 year leases be granted to individual miners. No leases were taken out in Wisconsin until 1822, and mining operations continued as before. In 1822 Col. James Johnson took out a 3 year lease. He engaged keel boats, which took up the river to the site of Galena a supply of good tools and a party of workmen, including some negro slaves.[10] He operated under military protection and did a successful business.

At this time there were several French and Indian settlements in the region, but very few Anglo-Saxons. As soon, however, as Col. Johnson's success became known, men came to the mines in great numbers. They arrived on the Mississippi River boats, on foot, on horseback, by wagon and stage. The Indian trails from northern Illinois were quickly converted into roads by the passage of the many immigrants. The newcomers came from all sections of the United States and from Europe. Cornishmen arrived as early as 1827.

This swarm of immigrants, supplied with good tools and firearms, drove the Indians from the mines and appropriated everything they wanted. Towns sprang up quickly. Smelting furnaces were erected, new mines were opened, old ones that had become too deep for the Indians to work with their crude tools were in many cases reopened and operated with great profit. The population on July 1, 1825, was 100; in August, 1826, it was 453.[11] The heaviest immigration was in 1829. In 1830 Wisconsin had a permanent population of 3,635, and a transient population of many thousands more, mostly in the lead region (Fig. 8, in Chap. III, p. 588).

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[6] Thwaites, R. G.: Notes on Early Lead Mining, *Wis. Hist. Coll.*, Vol. XIII, p. 279.

[7] *Ibid.*, p. 282.

[8] *Ibid.*, p. 283.

[9] Letter from Nicholas Boilvin, Indian Agent, to Wm. Eustis, Sec'y of War, *Wis. Hist. Coll.*, Vol. XI, p. 252.

[10] Thwaites, R. G.: Notes on Early Lead Mining. *Wis. Hist. Coll.*, Vol XIII, p. 290.

This influx of settlers caused great uneasiness among the Indians, who saw what they had regarded as their property being used by the ever-increasing white population. The Winnebago War of 1827 came as a result of the apprehensions of the Indians. Black Hawk's village was one of the largest Indian communities in the West, containing 500 families. The cultivation of about 3,000 acres of rich alluvial land near by was the chief means of subsistence of these people. The invasion and appropriation of this tract by squatters, who drove away the squaws and children, was the direct cause of Black Hawk's War in 1832.[12]

The output of lead from the upper Mississippi mines increased from 335,130 pounds in 1823 to 54,494,850 pounds in 1845. After this date the production declined, and in 1852 the output was only 28,603,960 pounds.[13] Before 1830 the ore brought about $80 a ton, but the tariff of 1830 reduced the duty and the price materially.[14]

In the beginning most of the lead was taken to market by way of the Mississippi River to New Orleans and the Atlantic to New York. This route was very roundabout and unsatisfactory. During low water the rapids at the head of Rock Island and at the mouth of the Des Moines River necessitated the reshipping of the cargo to small flat boats, which added greatly to the freight rates. Because of the difficulties and length of the southern route some small amounts of lead were sent east by the Fox-Wisconsin water route and the Great Lakes as early as 1822. After the erection of the Helena shot tower, which was built in 1833 and operated by a man from Green Bay, more material went by way of the Fox-Wisconsin. The cost of transporting lead to New York by way of Green Bay, the Great Lakes, and the Erie Canal was about $18 a ton, while the cost by the Mississippi-Atlantic route was $30 a ton.[15] The prospect of attracting the lead and shot trade to the East by way of Green Bay led to the formation of the Portage Canal Company in 1834, the object of which was to cut the Fox-

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[11] Thwaites, R. G.: Notes on Early Lead Mining, *Wis. Hist. Coll.*, Vol. XIII, p. 291.

[12] Wisconsin in Three Centuries, Vol. II, p. 188.

[13] *Hunt's Merchants' Magazine*, Vol. 40, p. 244.

[14] Legler, H. E.: Leading Events in Wisconsin History, p. 167.

[15] Libby, O. G.: Significance of the Lead and Shot Trade, *Wis. Hist. Coll.*, Vol. XIII, p. 308.

Wisconsin portage by a canal. The Wisconsin Internal Improvement Company, incorporated in 1835, was designed to improve the navigation on these rivers.

As early as 1836 lead was hauled overland to Lake Michigan in wagons drawn by oxen, and by 1839 a road was opened between the Mississippi River and Milwaukee.[16] In the summer, when the drivers could sleep on their wagons, and the oxen could procure food along the roadside, the cost of hauling the lead to Milwaukee was 50 cents a hundred pounds.[17] Returns from a shipment were received in four weeks by the Milwaukee route and in three months by the Mississippi-Atlantic route. The overland route to the East was used increasingly after 1839, and the Green Bay route was abandoned gradually. While the latter had been a first-class fur-trade route, it was too long and roundabout and required too much handling of freight to hold the lead trade. Milwaukee exported 1,888,700 pounds of lead and 2,614 kegs of shot in 1842,[18] and 2,200,000 pounds of lead and 250,000 pounds of shot in 1843.[19] This shows the increasing tendency to ship the lead overland.

The Helena shot tower on the south bank of the Wisconsin River in Iowa County manufactured a part of the Wisconsin product. As the shot makers of Missouri controlled the southern market, Wisconsin shot was compelled to find a market in the East. It was hauled to Milwaukee by " sucker " teams, which came from northern Illinois in the spring and returned in the fall. Local teamsters also engaged in the business, and farmers sometimes brought produce to Mineral Point and Dodgeville for sale, hauled lead to Helena, and from there took a lot of shot to Milwaukee.[20] The lead wagons returning from Milwaukee were always loaded. They carried lumber, shingles, hardware, salt, merchandise, and often immigrants and travelers. Helena came to be a supply station of considerable importance. From here grain as well as some lead and shot were shipped down stream to Galena. When the Milwaukee and Mississippi Railroad was built along the lower Wisconsin, it passed on the opposite side of the river from Helena. Helena could not compete with the railroad towns and gradually lost most of its business and population. The first shot carried east from Helena by the railroad was 110,201 pounds in 1853.

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[16] Thwaites, R. G.: Wisconsin, p. 296.

[17] Wisconsin in Three Centuries, Vol. II, p. 273.

[18] *Ibid.*, p. 274.

[19] *Hunt's Merchants' Magazine*, Vol. VIII, p. 380.

[20] Libby, O. G.: Significance of the Lead and Shot Trade, *Wis. Hist. Coll.*, Vol. XIII, p. 353.

The railroad carried 415,714 pounds in 1857, and 16,480 pounds[21] in 1861—after which date the shot tower was closed.

The production of lead in the Galena region increased until 1845, remained about constant for two years, and then decreased. The output of 1840 was 22,249,000 pounds,[22] of which Wisconsin produced 15,129,000 pounds, valued at $500,000. The state then had 49 smelting plants, representing a total capital of $664,600.[23] The great bulk of the upper Mississippi lead was still being shipped to St. Louis and New Orleans in 1845, but the percentage of lead that went south decreased steadily thereafter. In 1845 54,494,850 pounds came from the mines,[22] St. Louis and New Orleans receiving 51,000,000 pounds of it.[24] In 1857 the production was 34,183,000 pounds,[22] while only 14,000,000 pounds went to the southern cities.[24] New Orleans was affected most seriously. In 1852 when the mines produced 28,603,960 pounds of metal,[25] 17,985,000 pounds were received at New Orleans.[26] In 1854 the output was 29,650,000 pounds[25] and in 1856 30,000,000 pounds.[25] In those two years the receipts at New Orleans were 5,000,000[27] and 1,000,000 pounds respectively. The great bulk of the lead was being "forwarded to the northern cities."[28]

There were various causes for the diversion of the lead trade to the East, some of which have been noted. (1) While the conditions of navigation on the Mississippi were never good, they were made worse by the protracted low water of 1839–40. A stagnation in trade resulted. Lead accumulated in the hands of dealers and had to be held until there was water enough to allow it to be carried down river. Freight rates from St. Louis to the mining region increased; $2 to $3 a barrel was charged for flour, and similar prices for other freight.[29] Wheat was worth only 37½ cents a hundred in the Rock River region, while flour brought $10 to $12 per barrel.[30] (2) Because of the extent and importance of the industry the merchants desired a more direct line of communication to the East, by means of which they could get the produce to market and receive returns in a shorter time. (3) The monopoly of the southern trade by the shot makers of Missouri sent the shot from Helena to the East. (4) The chief owners of the shot tower between 1836 and 1843 were Buffalo men who created a market for their produce in that city, and when the tower changed hands in 1843 the route was too well established to be changed.[31] Lead was naturally shipped in the direction in which the shot was sent. (5) In 1841 the manufacture of white lead was commenced at Buffalo, 10 tons being made in that year.[32] The low price of lead in 1842 encouraged the establishment of other paint factories, which consumed a large portion of the Wisconsin lead. (6) By request of Governor Doty of Wisconsin, the freight rates for lead on the Erie Canal were reduced in 1842, which encouraged shipping along the eastern route.

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[21] Libby, O. G.: Significance of Lead and Shot Trade, *Wis. Hist. Coll.*, Vol. XIII, p. 369.
[22] *Hunt's Merchants' Magazine*, Vol. 40, p. 244.
[23] Census Report of 1840.
[24] *Hunt's Merchants' Magazine*, Vol. 41, p. 126.
[25] *Ibid.*, Vol. 40, p. 244.
[26] *Ibid.*, Vol. 29, p. 572.
[27] *Ibid.*, Vol. 31, p. 476.
[28] *Ibid.*, Vol. 27, p. 430.
[29] Libby, O. G.: Significance of Lead and Shot Trade, *Wis. Hist. Coll.*, Vol. XIII, p. 315.
[30] *Ibid.*, p. 316.

The imports of lead into Buffalo were 23,926 pigs in 1842, and 23,753 in 1843,[33] all of which came by the Great Lakes. By 1845 the trade to the East was well established; 4,200 pigs entered Buffalo in April of that year.[34] The demand for better transportation in Wisconsin came not only from those interested in the lead industry but also from the farmers. Their surplus produce was without a market. Wheat was cheap and flour and other manufactured articles were high because of the cost of transportation. The agricultural products became a much more important element in the commerce of the state than was the lead, but the lead created the first demand for better transportation across the state and caused the agitation for the Milwaukee-Rock River Canal, which finally resulted in the Milwaukee and Mississippi Railroad.

The shifting of the lead trade from a north-south to an east-west route was only one phase of a general change then occurring in all lines of trade. The South was, and still is, largely agricultural and needed but little that Wisconsin produced. The East, on the contrary, was, even then, largely industrial and had to be supported by raw products from other parts. The market which induced this change in the direction of trade has been of very great importance to Wisconsin's industries.

The decline of the lead industry after 1845 is traceable to several causes. (1) The early diggings at and near the surface were worked out, and expensive methods and machinery were necessary to mine at greater depths below the level of ground water. (2) The knowledge of the geology of the region, which should have located the ore and determined its commercial value and the best methods of working it, was inadequate. (3) The profit on lead mining and manufacture was diminished materially by the tariff of 1846, which decreased the duty on lead, and this, together with the difficulty of mining, discouraged further efforts. (4) The discovery of gold in California in 1848 was a signal for emigration from the lead region. (5) The copper and iron mines of Lake Superior attracted many. (6) The discovery of silver with accompanying lead in the Black Hills in 1860 served to increase the neglect of the upper Mississippi mines.

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[31] Libby, O. G.: Helena Shot Tower, *Wis. Hist. Coll.*, Vol. XIII, p. 358.
[32] *Ibid.*, p. 319.
[33] *Ibid.*, p. 324.
[34] *Niles Register*, Vol. 68, April 19, 1845, p. 102.

The population of the townships directly concerned in mining increased until 1870, after which date there was a steady decrease.[35] The same is true of the land values per capita and the farm produce per capita.[36] The non-lead townships, on the contrary, increased in population after 1860, and usually, too, in farm values and produce per capita. This is due to the fact that with the decline of the mining industry the younger and more vigorous men emigrated, leaving the work to be carried on by the older and less enterprising ones. They continued to operate in the old-fashioned and unprofitable way, keeping out immigrants who would have developed the agricultural resources. The non-lead townships are no more fertile than the lead townships, but their population and industrial life were replenished by young settlers who developed the resources in a modern way. This state of affairs is reflected in the political life. The lead townships are characterized by the complaint of hard times; the men vote, as a rule, against the party in power. The non-lead townships, on the contrary, are thriving, prosperous, and satisfied with the government.[37]

One effect of the lead industry in Wisconsin was to attract and distribute population in the southern part of the state. The first was a population of French and Indians. It was small and, until the Sauks and Foxes engaged in the business, transient. Anglo-Saxons came in about 1819, though the great rush did not begin until three years later. This was also largely transient. The necessity of furnishing themselves with provisions at a reasonable cost led the miners to give out glowing accounts of the fertility of the region, thereby attracting an agricultural population. The population of 1830 was almost entirely located in the southwestern part of the state (Fig. 8, in Chap. III, p. 588). By 1840 there was a thickly settled area around Milwaukee, but the connection between that and the population of the lead region was slight (Fig. 9, in Chap. III, p. 589). The sympathies of the people near Lake Michigan were with the East, since the majority of them had come from New England and New York. The affiliations of the lead miners, on the contrary, were with the South. Many of the operators were Southerners, and they often used slaves in the mines. Their economic relations were with St. Louis and New Orleans, and their intellectual life had its center in those two cities.

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[35] Libby, O. G.: Lead Region of Southwestern Wisconsin, *Trans. Wis. Acad. Arts, Letters, Sci.*, Vol. 13, p. 193.

[36] *Ibid.*, p. 194.

[37] *Ibid.*, p. 195.

The interrupted navigation of the Mississippi, caused by low water, forced the lead miners to make a route across the state to an eastern market. This brought them into contact with the eastern population and gave them a new interest. The cities along the Lake profited by the lead trade and encouraged it in all possible ways. The territory between the eastern and western sections was settled, in part at least, by people brought out on the freight wagons that plied between the two sections. The paths made by the lead wagons guided the settlers into the interior from the lake ports. Without them it is doubtful if the two sections of the state would have been so closely united as appears on the population map of 1850 (Fig. 10, in Chap. III, p. 591).

The question of the transportation of lead and later of agricultural products from the West to the East formed a common bond between the two sections, and they united in the endeavor to secure legislation on the subject. The influence of capitalists of Milwaukee, Buffalo, and New York, who had been attracted by the lead trade, was thrown into the scale for better lines of communication between the Mississippi River and Lake Michigan, and served still further to unite the two sections of the state.

In general, the lead trade attracted and distributed population throughout the southern counties of Wisconsin, it brought capital into the state, and gave a strong impulse to its industrial life. Where it was carried on after it had ceased to be profitable, it caused a decrease of prosperity and population.

## IRON

Iron ores are found in several localities in Wisconsin. The first to be developed were those of Dodge and Washington Counties, a furnace being built at Maryville before 1855.[38] By 1859 there was a furnace at Ironton, Sauk County, and another at Black River Falls, making three in the state, all built to use native ores. In 1865 another furnace was built at Iron Ridge, Dodge County.[39] The iron industry in the southern part of the state was developed quietly and gradually, with little or no "boom," and with no great effect on the life of the state in general.

Much more spectacular was the discovery and opening up of the mines in northern Wisconsin. It was suggested very early by the Hon. Increase Lapham that iron deposits might be found along the Gogebic Range. In 1872 Capt. N. D. Moore was sent out by the La Pointe Iron Company to explore Penokee Gap, and he found hematite under the roots of a fallen tree at the present site of the Colby mine at Bessemer.[40] The Iron Chief Mining Company, which owned the range property on the Wisconsin side of the Montreal River, was organized in 1876 and began operations in 1878. The ore was high grade, having 63 per cent to 65 per cent of iron, so that when the first 1,000 tons of ore were shipped to Cleveland in 1884 it attracted attention, and miners and capitalists began to come to the region. Then began the Gogebic "boom." "In 1884 the blazed right of way of the Milwaukee, Lake Shore and Western Railway became the main street of Ironwood, Michigan," [41] which two years later was a city of 4,000 inhabitants. Hurley, Wisconsin, a village of a few log houses, became a city of brick buildings in an amazingly short time; and Bessemer grew with equal rapidity. A hundred or more companies were selling stock at high prices, railroads were projected into the region, and 15,000 people were soon on the range.[42]

The Aurora mine shipped 5,256 tons of ore in 1885 and 100,000 tons the next year. In 1886 the Colby shipped 300,000 tons. The net income on 100,000 tons of this ore was $190,000.[43] One million tons of ore were shipped in one season from the Norrie mine.[42] In spite of the fact that there were large quantities of high-grade ore in the region, more money was put into most of the mines than ever came out of them, and many people suffered large financial losses in the crash of 1887, when speculation ceased.

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[38] Chapman, S.: Handbook of Wisconsin, 2d ed., 1855, p. 63.

[39] Geology of Wisconsin, Vol. I, p. 613.

[40] Wisconsin in Three Centuries, Vol. IV, p. 226.

[41] *Ibid.*, p. 227.

[42] Thwaites, R. G.: Wisconsin, p. 294.

[43] Wisconsin in Three Centuries, Vol. IV, pp. 232–233.

In time the speculators were succeeded by legitimate miners who still get a good production of iron from the Gogebic mines, although these mines do not yield the quantity of marketable ore that is obtained from the Mesaba Range of Minnesota.

The discovery of the Florence mines on the Wisconsin side of the Menominee River in 1873[44] was followed by the rapid settlement and development of the Menominee Iron Range region. Within a very few years what had been almost an unbroken wilderness was dotted with thriving towns, and the rumble of the ore trains could be heard almost constantly. Ore shipments began in 1877 and reached 592,288 tons in 1880.[45] While the iron industry has not had so fundamental an influence on the history of the state as has the lead industry, it has served to populate and develop with great rapidity certain portions of the northern part that, without it, would have remained an unbroken wilderness for many years longer than they did.

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[44] Nursey, W. R.: Menominee Iron Range, 1891.

[45] Geology of Wisconsin, Vol. I, p. 84.

(*To be continued*)